UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/942,386	08/30/2001	Masud Beroz	TESSERA 3.0-176 DIV	1049

530 7590 01/28/2008

LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK
600 SOUTH AVENUE WEST
WESTFIELD, NJ 07090

EXAMINER	
TALBOT, BRIAN K	
ART UNIT	PAPER NUMBER
1792	

MAIL DATE	DELIVERY MODE
01/28/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte MASUD BEROZ and BELGACEM HABA

Appeal 2008-0890
Application 09/942,386
Technology Center 1700

Decided: January 28, 2008

Before BRADLEY R. GARRIS, CHUNG K. PAK, and THOMAS A. WALTZ, Administrative *Patent Judges*.

WALTZ, *Administrative Patent Judge.*

DECISION ON APPEAL

This is a decision on an appeal under 35 U.S.C. § 134 from the Primary Examiner's final rejection of claims 1-4. The remaining claims pending in this application are claims 5-10, which stand withdrawn from consideration as directed to a non-elected invention (App. Br. 2).[1] We have jurisdiction pursuant to 35 U.S.C. § 6(b).

---

[1] We refer to and cite from the "**APPEAL BRIEF**" dated Dec. 8, 2006.

According to Appellants, the invention is directed to a method of fabricating solder assemblies (App. Br. 2-3). Independent claim 1 is illustrative of the invention and a copy of this claim is reproduced below:

1. A method of fabricating solder assemblies comprising the steps of:

(a) providing a component including a dielectric base having a non solder-wettable surface, a plurality of pads exposed to said surface and an electrically conductive potential plane element having a non solder-wettable surface, the potential plane element overlying said surface of said base, said potential plane element having openings therein, said pads being exposed through said openings;

(b) providing a mass of molten solder on each such pad so that the molten solder on each such pads wets the pad; and

(c) cooling the solder and pads to solidify the solder and thereby provide solder masses on said pads projecting through said openings in said potential plane element, at least some of said solder masses being electrically isolated from said potential plane element.

The Examiner has relied on the following references as evidence of obviousness:

Carey	US 5,597,469	Jan. 28, 1997
Yeh	US 5,803,340	Sep. 8, 1998
Pierson	US 5,938,106	Aug. 17, 1999

ISSUES ON APPEAL

Claims 1-4 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Carey in combination with either Yeh or Pierson (Ans. 3).

Appellants contend that the Examiner leaves no doubt in the Answer that the rejection is based on the assertion that Carey teaches layer 16 can be formed from "non-solder wettable metal films such as chromium or aluminum" (Reply Br. 1, citing Ans. 3). Appellants assert that this is error since Carey only mentions "non-solder wettable metal films" as suitable materials for use as solder mask 30 (*id.,* citing Carey, col. 6, ll. 35-45). Appellants contend that layer 16 disclosed by Carey is not possibly an "electrically conductive" potential plane element as recited in claim 1 on appeal, but layer 16 may be a thick film dielectric without conductive properties (App. Br. 5, citing Carey, col. 6, ll. 47-49). Appellants contend that it is clear from Carey "as a whole" that layer 16 is formed from a dielectric material (Reply Br. 2). Appellants further contend that Carey contemplates solder 40 remaining in contact with layer 16 after reflow and, if layer 16 was an electrically conductive metal, all pads 14 would be short-circuited (Reply Br. 2, citing Carey, Figs. 5 and 6).

Appellants also contend that none of the references disclose or suggest clause (c) of claim 1 on appeal, namely "cooling the solder and pads …

[with] at least some of the solder masses being electrically isolated from said potential claim [sic, plane] element" (App. Br. 6).

The Examiner contends that Carey "teaches that non-solder wettable metal films such as chromium or aluminum can be used as mask (16)" (Ans. 3). The Examiner further contends that mask 16 corresponds to the claimed electrically conductive plane element, and the mask 16 can be made from electrically conductive metals such as chromium or aluminum as well as "alternative material" (Ans. 4). Since Appellants' Specification teaches chromium as an "electrically conductive potential plane element" (¶ [0021]), the Examiner contends that the claim limitation is met by layer 16 taught by Carey (Ans. 4).

We determine the following issues presented from the record in this appeal: (1) Has the Examiner established that Carey discloses or teaches that layer 16 may be an electrically conductive metal film?; and (2) If layer 16 disclosed by Carey is an electrically conductive metal film, has the Examiner established that Carey discloses or suggests that at least some of the solder masses would be electrically isolated from the potential plane element (layer 16)?

We determine that the Examiner has not established a prima facie case of obviousness in view of the reference evidence. Therefore, we REVERSE the sole ground of rejection presented in this appeal essentially for the reasons stated in the Brief and Reply Brief, as well as those reasons set forth below.

OPINION

As discussed above, both Appellants and the Examiner focus on col. 6, ll. 35-49, of Carey as basis for their respective positions that layer 16 is/is

not a non-solder wettable *metal* film. We determine, from consideration of Carey as a whole, that there is no disclosure or suggestion that layer 16 can be a metal film. Our reasoning follows.

We determine that the only disclosure found in Carey of non-solder wettable metal films is at col. 6, ll. 38-41:

> Non-solder wettable metal films, such as chromium, can also be used since differential etch rates between chromium and copper and solder materials can be achieved by known processes and etchants.

We determine that Carey discloses at least two layers that are "non-solder wettable material," namely solder mask 30 and layer 16 (Carey, col. 5, l. 66-col. 6, l. 1; and col. 6, ll. 20-21). However, we determine that it is clear from the reference as a whole that Carey is referring to solder mask 30 at the above-quoted col. 6, ll. 38-41, of Carey, because the complete sentence refers to the differential etch rates between chromium and copper. We determine that solder mask 30 is etched away (see Figs, 4 and 5; col. 5, ll. 46-50) from the adjacent conductive layer 20, a copper layer, but layer 16 is not etched away (Carey, col. 4, ll. 22-38; col. 5, ll. 46-50; Fig. 6). Therefore we determine that Carey teaches that solder mask 30 may be chromium but we find no disclosure or suggestion that layer 16 may be chromium or aluminum. To the contrary, we determine that Carey teaches that, at least with certain substrates, layer 16 can be formed as a thick film dielectric (Carey, col. 6, ll. 46-48).

Additionally, we determine that if, as the Examiner contends, layer 16 was formed of a conductive metal, the Examiner has not explained how at least some of the solder masses would be electrically isolated from the

potential plane element (layer 16). *See* Fig. 6 of Carey, where layer 16 contacts pad 14 and reflowed solder 40. Since the pad 14 and solder 40 are electrically conductive (Carey, col. 3, l. 50; col. 5, l. 34), the Examiner has not explained how the solder assembly of Carey would function if layer 16 was an electrically conductive metal film (potential plane element). We note that the Examiner has not discussed how any reference discloses or suggests clause (c) of claim 1 on appeal, specifically with regard to electrically isolating at least some of the solder masses from the potential plane element.

We also note that neither Yeh nor Pierson remedy the deficiencies discussed above, as both were applied as evidence that it was known in the art to cool applied solder to form solder balls (Ans. 3).

For the foregoing reasons and those stated in the Brief and Reply Brief, we cannot sustain the Examiner's rejection presented in this appeal. The decision of the Examiner is reversed.

REVERSED

tc

LERNER, DAVID, LITTENBERG,
KRUMHOLZ & MENTLIK
600 SOUTH AVENUE WEST
WESTFIELD, NJ 07090